Social, Economic, and Workforce Implications of IT and IT Workforce Development (SEW)

SEW Agencies: NSF, NIH, DOE/SC, NASA, DOE/NNSA
Other Participant: GSA

SEW activities focus on the nature and dynamics of IT impacts on technical and social systems as well as the interactions between people and IT devices and capabilities; the workforce development needs arising from the growing demand for workers who are highly skilled in information technology; and the role of innovative IT applications in education and training. SEW also supports efforts to transfer the results of IT R&D to the policymaking and IT user communities in government at all levels and the private sector. The goal of SEW research and dissemination activities is to enable individuals and society to better understand and anticipate the uses and consequences of IT, to inform social policymaking, IT designs, and broadened participation in IT education and careers.

President's 2006 Request

Strategic Priorities Underlying This Request

- The President's Information Technology Advisory Committee (PITAC) noted in 1999 that the societal implications of the digital revolution were not yet clear and required examination. Six years later, the revolution continues to sweep us rapidly forward, and understanding the implications so that society can make informed choices remains a necessity. As the only NITRD agency funding basic research on the social and economic implications of IT, NSF has already contributed significant R&D findings: explaining the productivity paradox; expanding understanding of Internet use in the home, global e-commerce, and design principles for scientific collaboratories; and prototyping ways to embed principles of trust in e-commerce protocols and mechanisms.
- The NITRD Program is the Nation's primary resource for addressing the education and training of new generations of advanced IT researchers and technical professionals. In addition to the support for U.S. graduate students that flows with NITRD grants to universities, the SEW agencies sponsor targeted education and training in computational science, IT security, biomedical informatics, K-14 science subjects, and IT for underserved communities. The Collaborative Expedition Workshop series plays a related role, connecting people who have developed advanced IT implementations with those who are seeking to learn how to apply these capabilities to improve government and community services – with an emphasis on open standards, reusable components to maximize cost-effectiveness, and interoperability.

Highlights of Request

- **NSF:** Continue multiyear 2005 ITR projects in SEW topic areas (selected awards include infectious disease informatics; globalization and the distribution of knowledge work; socio-technical systems for management of biohazardous emergencies); new program in Broadening Participation for Underserved Communities in IT Activities
- **NSF, with EPA, NASA, USGS:** Support for projects in eco-informatics and government decision-making
- **NSF, Library of Congress:** Continue 2005 initiative in digital archiving/long-term preservation
- **DOE/NNSA, DOE/SC:** Continue support for Computational Science Graduate Fellowship Program
- **CIO Council and GSA, with SEW:** Continue monthly Collaborative Expedition Workshop series

Planning and Coordination Supporting Request

As the only NITRD area focused on the implications of IT for society at large, for education, and for IT workforce development, SEW functions as a crossroads between the IT R&D community and the larger arena of policymakers and IT implementers. In the last several fiscal years, GSA has helped SEW expand its outreach to other communities by co-sponsoring with the Federal CIO Council a monthly open workshop series to foster collaboration among government and community implementers of IT and to demonstrate promising IT capabilities emerging from Federal research. NSF co-sponsors these events and invites researchers to give academic talks on selected topics in an attempt to bridge the gap between research and policy. The Collaborative

Expedition Workshops draw participants from Federal, state, and local government, nongovernmental organizations, and IT developers and researchers. The focus is on emerging technologies for application in such areas as emergency preparedness and response, environmental protection, public health and health care systems, government information services for citizens, and agency projects under the Administration's Federal Enterprise Architecture initiative. Through this activity, SEW's Universal Access Team has forged communication links with many other Federal IT implementation efforts.

2005 and 2006 Activities by Agency

NSF: SEW-related R&D under ITR program; research in collaboration in the sciences and for emergency preparedness, advancing knowledge and the knowledge economy, socio-technical issues in intelligence informatics; collaborations with the European Commission Information Society Technologies Programme; broadening participation for underserved communities in IT activities; and expanded opportunities for innovative education and curriculum development projects

NIH: Graduate and postdoctoral fellowship programs in bioinformatics

DOE/SC and DOE/NNSA: Computational Science Graduate Fellowship Program

NASA: Learning Technologies Project. No SEW activities reported for 2006.

GSA: Collaborative Expedition Workshop series

Agency NITRD Budgets
By Program Component Area
2005 Budget Estimates and **2006 Budget Requests**
(Dollars in Millions)

Agency		High End Computing Infrastructure & Applications (HEC I&A)	High End Computing Research & Development (HEC R&D)	Human-Computer Interaction & Information Management (HCI & IM)	Large Scale Networking (LSN)	High Confidence Software & Systems (HCSS)	Software Design & Productivity (SDP)	Social, Economic, & Workforce (SEW)	**Total**
NSF	2005 Estimate	198.9	101.8	167.4	96.2	66.7	66.4	97.5	795
NSF	**2006 Request**	**201.8**	**105.0**	**168.5**	**94.5**	**76.0**	**65.4**	**92.1**	**803**
NIH		133.8	66.6	173.4	84.8	12.3	26.3	12.3	509
NIH		**135.1**	**67.3**	**171.0**	**76.6**	**12.3**	**26.4**	**12.0**	**501**
DOE/SC[1]		98.2	107.3		43.9			3.5	253
DOE/SC		**105.7**	**82.0**		**36.2**			**3.5**	**227**
DARPA[2]			64.3	61.2	17.2				143
DARPA[2]			**81.0**	**74.4**	**20.8**				**176**
NSA			53.9		1.5	57.2			113
NSA			**36.9**		**1.5**	**62.2**			**101**
NASA[2]		53.7	1.7	39.2	29.6	17.9	14.1	6.7	163
NASA[2]		**34.0**		**14.5**	**13.0**	**12.8**			**74**
AHRQ[2]				45.0	35.0				80
AHRQ[2]				**38.0**	**30.0**				**68**
NIST		3.4	0.6	7.6	4.6	18.0	4.8		39
NIST		**5.4**	**0.6**	**8.6**	**4.6**	**18.0**	**4.8**		**42**
OSD						2.4	19.2		22
OSD						**2.5**	**20.0**		**22**
NOAA		12.9	1.8	0.4	2.7		1.5		19
NOAA[2]		**13.7**	**1.8**	**0.5**	**2.8**		**1.5**		**20**
EPA		2.3		2.0					4
EPA		**3.3**		**3.0**					**6**
Subtotals		503.2	398.0	496.2	315.5	174.5	132.2	120.0	2,140
Subtotals		**499.0**	**374.6**	**478.5**	**280.0**	**183.8**	**118.1**	**107.6**	**2,041**
DOE/NNSA[2]		31.4	34.5		13.3		32.9	4.7	117
DOE/NNSA[2]		**33.1**	**30.5**		**14.3**		**31.6**	**4.4**	**114**
TOTALS[2]		534.6	432.5	496.2	328.8	174.5	165.1	124.7	2,256
TOTALS[2]		**532.1**	**405.1**	**478.5**	**294.3**	**183.8**	**149.7**	**112.0**	**2,155**

[1] For comparability to current characterizations, the 2005 DOE/SC LSN number includes $16.4 million for National Collaboratory Tools and Pilots, which had been previously included in HCI&IM.

[2] These totals supersede numbers released with the President s 2006 Budget. Discrepancies resulted from rounding and late shifts in estimates.